Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of

Amendment of Part 68 of the Commission's Rules) CC Docket No. 96-28

REPORT AND ORDER

Adopted: July 30, 1997 **Released:** August 22, 1997

By the Commission:

I. INTRODUCTION

1. In this Report and Order ("Order"), we adopt final rules to amend Part 68 of the Commission's rules, which governs the terms and conditions under which customer-provided terminal equipment may be connected to the telephone network without causing harm to the network.[1] The amendments we adopt herein are designed to harmonize United States and Canadian requirements governing connection of terminal equipment to the public switched network ("PSN") and to promote barrier-free trade between Canada and the United States, in keeping with the spirit of the North American Free Trade Agreement ("NAFTA").[2] As a result of these amendments to Part 68, manufacturers in one country will be able to design and test terminal equipment to comply with a single, consistent set of technical standards accepted in both the United States and Canada.

II. BACKGROUND

[1] See 47 C.F.R. Part 68. For a history of Part 68, see Proposals for New or Revised Classes of Interstate and Foreign Message Toll Telephone Service ("MTS") and Wide Area Telephone Service ("WATS"); Revision of Part 68 of the Commission's Rules to Specify Standard Plugs and Jacks for the Connection of Telephone Equipment to the Nationwide Telephone Network; and Amendment of Part 68 of the Commission's Rules (Telephone Equipment Registration) to Specify Standards for and Means of Connection of Telephone Equipment to Lamp and/or Annunciator Functions of Systems, Memorandum Opinion and Order, 70 FCC 2d 1800 (1979).

[2] In Canada, certification means the right to attach terminal equipment to the PSN. Certification requires submission of an application that includes a technical description of the equipment and a measurement report showing compliance with CS-03, the Canadian terminal attachment standard. Canadian requirements for terminal attachment are issued by Industry Canada ("IC"). Under the direction of IC, the Terminal Attachment Program Advisory Committee ("TAPAC"), a government and industry advisory committee, reviews and recommends changes to equipment certification programs. Canada amended its terminal attachment rules (CS-03 standards) to harmonize Canadian standards for terminal equipment with those set forth in Part 68 on August 14, 1996. Canada Gazette, Part I, June 15, 1996, Notice No. SMSE-003-96.

2. On March 9, 1995, the Telecommunications Industry Association ("TIA") filed a Petition for Rulemaking ("Petition") to amend Sections 68.300 - 68.318 and portions of Section 68.2 of the Commission's rules to harmonize United States network protection standards and corresponding Canadian CS-03 certification regulations. Subpart D of Part 68, which includes Sections 68.300 through 68.318, addresses "Conditions for Registration," including requirements for environmental simulation (simulation "mimics" stresses that terminal equipment undergoes in shipment and handling that could potentially damage it), leakage current limitations, hazardous voltage limitation, signal power limitations, longitudinal balance limitations, on hook impedance limitations, billing protection, and hearing aid compatibility. Section 68.2 addresses the scope of the Commission's rules for terminal attachment.

3. TIA is a national trade association with more than 570 member companies engaged in the manufacture, sale and distribution of telecommunications equipment including terminal equipment. TIA's Petition is the culmination of four years of technical effort by United States and Canadian industry. In September, 1990, TIA's Engineering Subcommittee TR-41, sponsored by its User Premises Equipment Division, proposed a project to "address differences" between Canadian and United States terminal attachment rules.[3] The Subcommittee created a joint working group co-chaired by representatives from the United States and Canada to develop a harmonized set of rules to comply with both countries' requirements for terminal attachment.[4]

4. In February 1996, in response to TIA's Petition and comments received on the petition, the Commission issued a Notice of Proposed Rulemaking ("Notice") proposing to amend Part 68 to harmonize United States and Canadian requirements for connection to the PSN.[5] In the Notice, the Commission tentatively concluded that the amended rules would promote barrier-free trade between the United States and Canada by eliminating unnecessary differences in terminal

[3] TIA's technical work is conducted through its Engineering Committees, which develop, maintain, and publish voluntary standards and technical reports. TIA encourages these committees to work cooperatively with members of the American National Standards Institute ("ANSI"), as well as international standards bodies outside the United States, to harmonize telecommunications equipment standards to avoid duplicating standardization work already successfully completed. TIA's stated trade policy goals include "removal of barriers to market access, full participation of United States government and industry in the standards-setting process worldwide, and achievement of a minimum level of standards required to ensure interoperability and proper function of the international network." See TIA Petition at 2.

[4] According to TIA, a wide range of interest groups in the United States and Canada were represented including carriers, manufacturers, laboratories, consultants and government personnel

[5] See Public Notice, "Pleading Cycle Established for Comments on TIA's Petition for Rulemaking to Amend Part 68, Subpart D", 10 FCC Rcd 4548 (March 27, 1995); Amendment of Part 68 of the Commission's Rules, Notice of Proposed Rulemaking, 11 FCC Rcd 13282 (1996); Erratum, (rel. March 29, 1996) ("Notice"). Seven parties filed comments in response to the Notice. On April 16, 1996, one party filed reply comments. Appendix A contains a list of parties that filed comments in this proceeding.

attachment requirements.[6] We tentatively concluded that the amended rules would be consistent with the spirit of NAFTA, and might become a guide for harmonization efforts with other countries.[7] Furthermore, we tentatively concluded that the amended rules would create a more competitive equipment marketplace, resulting in lower costs for equipment, thereby benefitting United States and Canadian consumers. We also stated that the proposed rules were consistent with our commitment to ensure that customers and manufacturers can connect terminal equipment to the telephone network without causing harm to the network.[8] Finally, we tentatively concluded that the Commission must retain ultimate responsibility for Part 68 functions, but should rely on standards bodies whenever possible to resolve complex technical matters. We sought comment on these tentative conclusions.[9]

III. DISCUSSION

A. Technical Amendments

5. Positions of the Parties. There is unanimity of opinion among commenters that harmonization of Part 68 and CS-03 will benefit terminal equipment manufacturers as well as the telecommunications industry. There were no oppositions to any of the proposed rules. Northern Telecom ("Nortel"), for example, supports the Commission's proposal and suggests that harmonization of technical requirements for attachment of terminal equipment to the PSN will facilitate trade between the United States and Canada because manufacturers will need to design and test to only one set of common standards.[10] Lucent agrees that the amendment of Part 68 will result in commercial advantages.[11] NYNEX argues that, under the proposed rules, a *de facto* barrier to trade that was inconsistent with NAFTA will be eliminated.[12] Ameritech says that the proposed rules are an example of how "the government and industry can achieve agreement without the need for additional regulation."[13]

6. TIA and Sprint propose editorial corrections to the Part 68 rules in attachments to

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[6] Notice, 11 FCC Rcd at 13295.

[7] Id. The rules are consistent with the aims of the World Trade Organization, which like NAFTA, seek to reduce trade barriers in order to promote competition.

[8] Id.

[9] Id.

[10] Nortel Comments at 1; see also VeriFone Comments at 1.

[11] Lucent Comments at 2.

[12] NYNEX Comments at 2.

[13] Ameritech Comments at 1; see also Verifone Comments at 1.

each of their comments.[14] Additionally, Sprint argues that the Commission should add any tariffed data rates, *i.e.*, all speeds of data communications that telephone companies agree to provide to the public for a requested service, to the amendments to Part 68.[15] More specifically, Sprint states that 38.4 kbps is an existing T1 subrate service and as such "qualifies for protection in accordance with the purpose of the Part 68 rules."[16]

7. Discussion. Based on the record, we amend Part 68 to harmonize it with Canada's CS-03 and summarize our amendments as follows. Section 68.302 is designed to protect the network from harm by ensuring that, despite being subject to environmental stresses, terminal equipment will continue to comply with Part 68 and not harm the network. Amended Section 68.302 deletes vibration, temperature, and humidity stresses from Part 68, and applies mechanical shock stresses only to equipment that might be affected by such stress. We delete these stresses because experience has shown, and the record supports, that they are unnecessary given the technological evolution in telecom equipment from an arrangement of discrete electronic components to solid state circuitry. Over the past ten years, failures during Part 68 registration testing involving these stresses is negligible. The benefits of streamlining our regulations in this regard far outweigh any possible harm to the network created by these stresses. In addition, as the result of industry coordination, we are including a new Type B surge test to better assure operability of customer premises equipment during lightning storms.

8. Section 68.304 leakage current limitations ensure that telephone connections are adequately insulated against hazards to telephone company personnel caused by voltages within the equipment itself or as a result of accidental contact with commercial power sources. Previously, Section 68.304 required testing using a 60 Hertz test voltage. Amended Section 68.304 changes the 60 Hertz standard to either 50 or 60 Hertz to harmonize with international frequencies used for this purpose and with Underwriters Laboratories and Canadian Standards Association insulation standards.

9. Section 68.306 imposes "fail safe" requirements on hazardous voltage. These limits are generally used throughout the telephone industry as voltage limitations below which special protection of telephone craft personnel is not required. Equipment must be designed to avoid creating voltages exceeding these limits under normal operation. We amend this section to delete hazardous voltage requirements for Message Registration ("MR") and Automatic Identification of

[14] Sprint Comments at 1; TIA Comments at 2.

[15] Sprint Comments at 3.

[16] Sprint requests that the valid tariffed data rate of 38.4 kbps be included in Section 68.308(h)(1)(i), Table 68.308(c), and Table 68.310(b). Notice, 11 FCC Rcd at 13241-42, 13431.

Outward Dialing ("AIOD") because these types of technology are no longer in use.[17] In addition, this Order changes the current voltage limitation from 80 to 60 volts to harmonize it with international safety standards.

10. The signal power limitations of Section 68.308 are designed to protect the network from interference caused by excessive signal power. We update this section by revising the "Through Gain" Table to reflect services such as Integrated Services Digital Network ("ISDN") and to delete references to the 4-wire Conventional Termination Set interface.[18] We also expand subrate digital channel rates to include all rates presently used by industry, and adopt the ANSI T1 standard to replace the standard in the previous rules.[19] Section 68.308 also protects the network from harm by addressing crosstalk interference. We reword this section for clarity and rename this section "Transverse Balance Limitations" to harmonize it with internationally recognized Institute of Electrical and Electronic Engineers' ("IEEE") terminology.

11. Section 68.312 addresses the impedance (*i.e.*, the resistance a circuit offers to alternating current) that must be maintained on a telephone line. The amended rules reorganize and reword this section for clarity. Specifically, the amended rules reduce the categories of ringer types. We also delete those sections addressing message registration because this technology is no longer in use.

12. Section 68.314 ensures that transmission of signals in the network does not interfere with proper operation of network billing equipment. The amendments to this section include rewording the section for clarity and deleting operating requirements for AIOD because the technology has been replaced. We also add a new section to clarify reverse battery billing (a type of loop signaling) requirements. Section 68.316 Hearing Aid Compatibility requirements are not amended by this Order. Furthermore, we delete reference to 1.544 Mbps digital "keep-alive" requirements from Section 68.318 because they are no longer in effect.[20] Finally, we amend definitions in Section 68.3. For example, we delete references to MR and AIOD equipment, but clarify that any MR and AIOD equipment that remains connected to the network may continue to

[17] Message Registration ("MR") was a specific traffic recording system provided by certain older types of telephone systems. Automatic Identification of Outward Dialing ("AIOD") was a private branch exchange (PBX) service feature that identified the calling line on calls directed to a public switched telephone network for automatic message accounting recording purposes.

[18] The Through Gain Table shows the maximum net amplification permitted in multiport systems between ports. The 4-wire Conventional Terminating Set interface was an older technology used for connection of customer provided equipment to analog voiceband private line services.

[19] Subrate digital channel rates previously used by the industry ranged from 2.4 to 64 kilobits/second (kbps).

[20] "Keep-alive" refers to constantly present direct current voltage formally provided from the central office. Section 68.318 previously stated that "[u]ntil December 18, 1989, terminal equipment connecting to 1.544 Mbps services shall contain circuitry that assures continuity of output signal."

be used under the provisions of Section 68.2.

13. The record supports our tentative conclusion that amendment of Part 68 as described above should lower the price consumers pay for terminal equipment by facilitating greater efficiencies in the manufacturing and testing of terminal equipment. Under the amended rules, the technical requirements of Part 68 and CS-03 would be harmonized so that a manufacturer in one country can design and test terminal equipment to a single, consistent set of technical standards accepted in both the United States or Canada. We conclude that these efficiencies will lead to an even more competitive market for terminal equipment than currently exists, resulting in lower costs for equipment, thus benefitting United States and Canadian consumers.

14. Moreover, as commenters recognize, the amendments to Part 68 reconcile differences in standards and testing consistent with NAFTA. Currently, terminal equipment manufactured for use in the United States must meet the technical requirements of Part 68. Similarly, terminal equipment manufactured for use in Canada must comply with the technical requirements contained in CS-03. Each country's respective technical requirements have differed sufficiently that terminal equipment complying with one set of regulations would not necessarily comply with the technical requirements of the other country. These differences, as NYNEX correctly states, have created unreasonable burdens on manufacturers and are a *de facto* barrier to trade inconsistent with the goals of NAFTA. By reconciling differences in standards and testing, harmonization promotes the goals of NAFTA.[21] Furthermore, the record supports our tentative conclusion that, as amended, the rules remain consistent with the Commission's longstanding commitment to ensure that no public harm results from attachment of private equipment to the PSN. The record is unanimous that the amended rules in no way diminish network protection.

15. Finally, we have reviewed the editorial corrections proposed by TIA and Sprint and find that they clarify our rules. For this reason, our final rules incorporate these suggested changes. In addition, we have added the tariffed data rate that Sprint suggests to our rules. While we decline to require that all tariffed rates be included, we agree that the specific tariffed rate Sprint suggests should be included to cover its currently available service.

B. Grandfathering Provision

16. Positions of the Parties. Lucent argues that the Commission should amend Section 68.2(j) to "provide grandfathering for existing equipment, in order to avoid any requirement to re-

[21] At a February 1997 meeting of the Telecommunications Standards Subcommittee ("TSSC"), Mexico agreed to a "minimal" set of network protection standards pursuant to NAFTA Article 1304-1 (with minor exceptions to accommodate national deviations in networks) consistent with our initiative here to harmonize United States and Canadian network protection standards. The TSSC was established under NAFTA (Article 913) to create a work plan for "making compatible the standards-related measures for authorized equipment." It is comprised of officials from NAFTA member countries.

register all the equipment that has already been registered under current rules."[22] Lucent argues that a grandfathering provision is necessary to avoid re-registration of products that are already registered under current rules, are in use, and do not cause harm to the network. Several of the commenters add that re-registration of these products would impose substantial expense without yielding any benefits. We note that no party has objected to a grandfathering provision.

17. Discussion. We are persuaded by commenters that there would be no benefit to requiring the re-registration of equipment already in use and shown not to cause harm to the network. We therefore adopt a grandfathering provision.[23] The new rule 68.2(j) reads as follows:

> Terminal equipment and systems registered prior to (**date these rules are effective**), do not have to be re-registered unless subsequently modified. All new equipment and systems manufactured after (**18 months after effective date**) must conform to the requirements.

C. Regulatory Process

18. Background. In the Notice, we stated that although harmonization of technical requirements for attachment of terminal equipment satisfies NAFTA requirements in a manner consistent with the interests of United States industry in facilitating greater efficiencies in manufacturing terminal equipment, we recognized that the usefulness of a harmonized standard is jeopardized if our regulatory process does not allow the standard to evolve at the same pace as technology.[24] Consequently, we tentatively concluded that the Commission should rely, whenever possible, on standards bodies to resolve complex technical issues. We stated our reluctance, however, to substitute industry consensus for our Part 68 rulemaking function as such consensus may not always promote the public interest.[25] We noted that standards bodies often lack the Commission's authority to ensure compliance with fair rules supporting safe and direct electrical connection of subscriber's terminal equipment to the PSN.[26]

19. Positions of the Parties. TIA and NYNEX urge the Commission to adopt a rule requiring manufacturers to comply with the technical recommendations of industry standards bodies with appropriate Commission oversight. NYNEX states that "[i]nstead of specifying technical

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[22] Lucent Comments at 2; see also TIA Comments at 2-3.

[23] We note, however, that based on past experience, the vast majority of equipment covered by the grandfathering rule will be phased out of production and replaced by models that will be subject to the new rules.

[24] Notice, 11 FCC Rcd at 13294.

[25] Id. at 13295.

[26] Id.

interfaces and requirements for terminal equipment in the rules, the Commission should simply adopt a rule that requires manufacturers of such equipment to comply with the technical requirements and technical recommendations developed by appropriate industry standards bodies under the Commission's auspices. . . ."[27] NYNEX contends that through its oversight of industry standards bodies, the Commission should be satisfied as to the "reasonableness" of any resulting technical recommendations. TIA argues that the current regulatory rulemaking process lags behind changes in technology and supports NYNEX's proposal.[28] Moreover, TIA states that NYNEX's suggested approach would be consistent with recent congressional directives.[29] VeriFone contends that industry standards bodies should remain responsible for technical issues, but concurs with the Commission's decision to retain ultimate responsibility in matters pertaining to Part 68 rulemaking authority.

20. Discussion. We acknowledge that efforts to harmonize our terminal attachment rules with those of other countries will be impeded if the regulatory rulemaking process fails to keep pace with technological changes. Therefore, we conclude that the Commission should rely, whenever possible, on standards bodies composed of industry experts to resolve complex technical matters. As we stated in the Notice, the Consultative Committee on Telecommunications ("CCT") has substantially assisted various harmonization activities.[30] Additionally, we recently sought comment on whether standards for enhanced wire quality and for determining gold equivalence should be permanent standards and, if so, what industry body or bodies shall determine an appropriate voluntary standard.[31] We decline, however, to substitute industry consensus completely for our Part 68 rulemaking function. While they often may most expeditiously resolve complex technical matters, standards bodies lack the Commission's authority to ensure compliance with fair rules supporting safe and direct electrical connection of subscribers' telephone terminal equipment to the PSN. We note, for example, that new Section 273(d)(4) of the Communications Act of 1934, as amended, seeks to ensure that voluntary standards do not become *de facto* standards that operate to exclude legitimate parties. Similarly, while it in this proceeding has strived to incorporate the advice and assistance of standards bodies to resolve complex technical matters, the Commission must continue to ensure through its rulemaking function that fair rules are developed.

IV. CONCLUSION

[27] NYNEX Comments at 3.

[28] TIA Comments at 3; TIA Reply Comments at 3-5.

[29] See, e.g., National Technology Transfer and Advancement Act of 1995, Pub. L. No. 104-113, § 12, 110 Stat. 775, 782-83 (1996).

[30] Notice, 11 FCC Rcd at 13294.

[31] Review of Sections 68.104 and 68.213 of the Commission's Rules Concerning Connection of Simple Inside Wiring to the Telephone Network, Order on Reconsideration, Second Report and Order and Second Further Notice of Proposed Rulemaking, CC Docket No. 88-57, FCC 97-209 (rel. Jun. 17, 1997), at paras. 54-55.

21. We conclude that the rules we adopt herein will eliminate unnecessary differences in terminal attachment requirements, and thereby promote barrier-free trade, between the United States and Canada. We find this to be consistent with the spirit and letter of NAFTA, which mandates elimination of trade barriers through reconciliation of differences in standards and testing procedures. These rules may become a model for our harmonization efforts with countries around the world and should benefit consumers by creating a more competitive equipment marketplace, thereby lowering the prices they pay for equipment. We conclude that these rules are consistent with the Commission's long-standing commitment to ensure that no public harm results from attachment of private equipment to the public switched network.

V. REGULATORY FLEXIBILITY ANALYSIS

22. Final Regulatory Analysis: Pursuant to the Regulatory Flexibility Act of 1980, 5 U.S.C. Section 601, et seq., the Commission's final analysis in this Report and Order is provided in Appendix B.

VI. ORDERING CLAUSES

23. Accordingly, IT IS ORDERED that, pursuant to Sections 1, 4, 201-205, 218, 220, 226, 227, 255, and 710 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154, 201-205, 218, 220, 226, 227, 255, and 610, and 5 U.S.C. §§ 552 and 553, this Report and Order is ADOPTED, and Part 68 of the Commission's Rules ARE AMENDED as set forth in Appendix C.

1. IT IS FURTHER ORDERED, that the rule amendments set forth in Appendix C
SHALL BE EFFECTIVE seventy days after publication in the Federal Register, except that the amendments to Section 68.308(h)(1)(i), Table 68.308(c), and Table 68.310(b) of Part 47 of the Commission's rules, 47 C.F.R. §§ 68.308(h)(1)(i), 68.308(c), and 68.310(b), SHALL BE EFFECTIVE 150 days after publication in the Federal Register.

24. IT IS FURTHER ORDERED, that the Commission SHALL SEND a copy of this Order, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

William J. Caton
Acting Secretary

APPENDIX A: LIST OF PARTIES

Comments

Ameritech (Ameritech)
Lucent Technologies Inc. (Lucent)
Northern Telecom (Nortel)
NYNEX Telephone Companies (NYNEX)
Telecommunications Industry Association User Premises Equipment Division (TIA)
Sprint Local Telephone Companies (Sprint)
VeriFone (VeriFone) (Late filed)

Reply Comments

TIA

APPENDIX B

FINAL REGULATORY FLEXIBILITY ANALYSIS

1. As required by the Regulatory Flexibility Act ("RFA"),[32] an Initial Regulatory Flexibility Analysis ("IRFA") was incorporated in the Notice of Proposed Rulemaking in this proceeding, 11 FCC Rcd 13282 (1996); Erratum, (released March 29, 1996) ("Notice"). The Commission sought written public comments on the proposals in the Notice, including comment on the IRFA. This present Final Regulatory Flexibility Analysis ("FRFA") in this Report and Order ("Order") conforms to the RFA.

Need for, and Objectives of, this Order and the Rules Adopted Herein:

2. Consistent with the intent of the North American Free Trade Agreement ("NAFTA"), this Order amends Part 68 of the Commission's rules to promote barrier-free trade between the United States and Canada. Part 68 governs the terms and conditions under which customer provided terminal equipment may be connected to the telephone network. As a result of the amendments to Part 68, manufacturers will be able to test terminal equipment for compliance with a single, consistent set of technical standards accepted in both the United States and Canada. The harmonization of terminal attachment rules in the United States and Canada will be a model for our harmonization efforts with other countries. We adopt a grandfathering provision to cover equipment already registered under current rules.

Summary of Significant Issues Raised by Public Comments In Response to the IRFA:

3. No comments were submitted specifically in response to the IRFA. We have reviewed the general comments to identify issues that may have a significant economic impact on small businesses. All commenters addressing the proposed amendments to Part 68 of our Rules supported the amendments.

Description and Estimate of the Number of Small Entities To Which Rules Will Apply:

4. The RFA directs the Commission to provide a description of and, where feasible, an estimate of the number of small entities that will be affected by the proposed rules. The RFA defines the term "small entity" as having the same meaning as the terms "small business," "small

[32] See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601 et seq., has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

organization," and "small business concern" under Section 3 of the Small Business Act.[33] A small business concern is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[34] SBA has defined a small business for Standard Industrial Classification ("SIC") category 4813 (Telephone Communications, Except Radiotelephone) to be a small entity when it has no more than 1,500 employees.[35]

5. Consistent with our prior practice, we here exclude small incumbent local exchange carriers (LECs) from the definition of "small entity" and "small business concern." While such a company may have 1500 or fewer employees and thus fall within the SBA's definition of a small telecommunications entity, such companies are either dominant in their field of operations or are not independently owned and operated. Out of an abundance of caution, however, for regulatory flexibility analysis purposes, we will consider small incumbent LECs within this present analysis and use the term "small incumbent LECs" to refer to any incumbent LEC that arguably might be defined by SBA as a small business concern.

6. Manufacturers of Telecommunications Equipment The Commission has not developed a definition of small manufacturers of terminal equipment. The closest applicable definition under SBA rules is for manufacturers of telephone and telegraph apparatus (SIC 3661), which defines a small manufacturer as one having 1000 or fewer employees.[36] According to 1992 Census Bureau data, there were 479 such manufacturers, and of those, 436 had 999 or fewer employees, and 7 had between 1000 and 1499 employees.[37] Consequently, we estimate that there are fewer than 443 small manufacturers of terminal equipment that may be affected by the decision and rules adopted in this Order.

Description of Projected Reporting, Recordkeeping and Other Compliance Requirements:

7. There are no reporting or recordkeeping requirements. Manufacturers will be required to test terminal equipment to a single, consistent set of technical standards accepted in both the United States and Canada.

Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant

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[33] See 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 5 U.S.C. § 632).

[34] 15 U.S.C. § 632.

[35] See 13 C.F.R. § 121.201.

[36] 13 CFR § 121.201, SIC 3661.

[37] 1992 Economic Census, Industry and Employment Size of Firm, Table 1D (data prepared by U.S. Census Bureau under contract to the U.S. Small Business Administration).

Alternatives Considered

8. We are adopting Section 68.2(j), which states that equipment already registered under the current rules does not need to be re-registered under the new rules. We believe that such a provision will save manufacturers, some of which may be small businesses, the expenses incurred in re-registering equipment that is already in use and has been shown not to cause harm to the network.[38] No alternative to this beneficial action was suggested.

Report to Congress:

9. The Commission will send a copy of the Order, including this FRFA, in a report to be sent to Congress pursuant to the Small Business Regulatory Enforcement Fairness Act of 1996, see 5 U.S.C. § 801(a)(1)(A). A copy of the Order and this FRFA (or summary thereof) will also be published in the Federal Register, see 5 U.S.C. § 604(b), and will be sent to the Chief Counsel for Advocacy of the Small Business Administration.

[38] The rule changes ameliorate potential technical barriers to entry in both the U.S. and Canada markets, thereby allowing manufacturers and suppliers, including smaller manufacturers and suppliers, a reasonable opportunity to conduct business in both markets. This result is consistent with the general purposes of Section 257 of the 1996 Telecommunications Act, 47 U.S.C. § 257. That section requires, among other things, that the Commission eliminate market entry barriers for small businesses who may provide parts or services to providers of telecommunications services and information services. Id. at § 257(a). The Commission recently issued a report in GN Docket No. 96-113 regarding its implementation of Section 257. See Section 257 Proceeding to Identify and Eliminate Market Entry Barriers for Small Businesses, Report No. 97-8, 1997 WL 232120 (1997).

Appendix C

Part 68 of Title 47 of the Code of Federal Regulations is amended as follows:

Part 68—CONNECTION OF TERMINAL EQUIPMENT TO THE TELEPHONE NETWORK

1. The authority citation for Part 68 continues to read as follows:

AUTHORITY: Sections 1, 4, 5, 201-5, 208, 215, 218, 226, 227, 303, 313, 314, 403, 404, 410, 522 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151,154, 155, 201-5, 208, 215, 218, 226, 227, 303, 313, 314, 403, 404, 410, 522.

2. Section 68.2 is amended by revising paras. (a)(3); (d) introduction text and adding new para. (d)(4) to read as follows:

§ 68.2 Scope.

*(a) * * **

(3) Of all PBX (or similar) systems to private line services for tie trunk type interfaces and off premises station lines. Services may only be added to this section as a result of rulemaking proceedings and equipment connected to such added services is afforded a reasonable transition period.

* * * * *

(d) Grandfathered private branch exchange (or similar) systems for connection to private line type services (tie trunk type services, off-premises station lines automatic identified outward dialing, and message registration):

* * * * *

(d)(4) PBX (or similar) systems connected with automatic identified outward dialing or message registration private line services of a type that complies with paras. (d)(l) and (d)(2) of this section may remain connected for life without registration unless subsequently modified.

* * * * *

*(j) Terminal equipment including premises wiring and protective apparatus (if any) directly connected to the network on (**effective date** 150 days after publication) may remain connected and be reconnected for life without registration, unless subsequently*

modified. New installations of terminal equipment, including premises wiring and protective apparatus (if any) may be installed (including additions to existing systems) up to (18 months after effective date), without registration of any terminal equipment involved, provided that the terminal equipment is of a type directly connected to the network as of (register only date _____). This terminal equipment may remain connected and be reconnected to the network for life without registration, unless subsequently modified.

* * * * *

3. Section 68.3 is amended by adding the following new definitions in alphabetical order to read as follows:

§ 68.3 Definitions.

* * * * *

Capture Level: Equipment with AGC (Automatic Gain Control) signal power limiting has virtually no output signal for input levels below a certain value. At some input signal power, the output level will become significant (usually corresponding to the expected output level) for the service application. The input level at which this occurs is defined as the "capture level."

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DTMF: Dual Tone Multi Frequency (DTMF) network control signalling is a method of signalling using the voice transmission path. The method employs sixteen (16) distinct signals each composed of two (2) voiceband frequencies, one from each of two (2) geometrically spaced groups designated "low group" and "high group." The selected spacing assures that no two frequencies of any group combination are harmonically related.

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Overload Point:
(1) For signal power limiting circuits incorporating automatic gain control method, the "overload point" is the value of the input signal that is 15 dB greater than the capture level.

(2) For signal power limiting circuits incorporating peak limiting method, the "overload point" is defined as the input level at which the equipment's through gain decreases by 0.4 dB from its nominal constant gain.

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Appendix C

Voiceband: The voiceband for analog interfaces is the frequency band from 200 Hz to 3995 Hz.

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Zero Level Decoder: The zero level decoder shall comply with the u=255 PCM encoding law as specified in ITU-TSS (CCITT) Rec. G.711 for voiceband encoding and decoding. See also Fig. 68.3(j).

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by removing the definitions for:

AIOD data channel simulator,

AIOD leads,

Message register leads,

Message register signaling channel simulator,

Tie trunk transmission interfaces.
(c) 4-wire conventional terminating set (CTS),

and Figures 68.3(a), 68.3(f), 68.3(g), 68.3(h), 68.3(i), 68.3(j), 68.3(k), 68.3(l) and 68.3(m),

by adding Figures 68.3(a), 68.(3)(f), 68.3(g), 68.3(h), 68.3(i), 68.3(j), 68.3(k).

by correcting figure references in the following definitions as follows:

Local Area Data Channel Simulator: Reference to Figure 68.3(k) is corrected to Figure 68.3(i);

Loop Simulator Circuit: The reference to Figure 68.3(i) is corrected to Figure 68.3(g); and the reference to Figure 68.3(j) is corrected to Figure 68.3(h)

* * * * *

Section 68.222 is removed.

Appendix C

Section 68.300 is revised to read as follows:

§ 68.300 Labeling requirements.

(a) Registered terminal equipment and registered protective circuitry shall have prominently displayed on an outside surface the following information in the following format:

Complies With Part 68, FCC Rules

FCC Registration Number _____

Ringer Equivalence: _____

(b) Registered terminal equipment and registered protective circuitry shall also have the following identifying information permanently affixed to it.

(1) Grantee's name.

(2) Model number, as specified in the registration application.

(3) Serial number or date of manufacture.

(4) Country of origin of the equipment: "Made in ____." Required if the equipment is not manufactured in the United States. (Country of origin shall be determined in accordance with 19 U.S.C. 1304 and regulations promulgated thereunder.)

(5) As used herein, "permanently affixed" means that the required nameplate data is etched, engraved, stamped, indelibly printed or otherwise permanently marked. Alternatively, the required information may be permanently marked on a nameplate of metal, plastic, or other material fastened to the enclosure by welding, riveting, or with a permanent adhesive. Such a nameplate must be able to last for the expected lifetime of the equipment and must not be readily detachable.

(6) When the device is so small or for such use that it is not practical to place the statements specified in this section on it, the information required by paras. (a) and

(b) of this section shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user. The FCC Registration Number and the Model Number shall be displayed on the device.

5. Section 68.302 is revised to read as follows:

§ 68.302 Environmental simulation.

Unpackaged Registered Terminal Equipment and Registered Protective Circuitry shall comply with all the rules specified in this subpart, both prior to and after the application of the mechanical and electrical stresses specified in this section, notwithstanding that certain of these stresses may result in partial or total destruction of the equipment. Both telephone line surges, Type A and Type B, shall be applied as specified in paras.(b) and (c). Different failure criteria apply for each surge type.

(a) Mechanical Shock.

(1) Hand-Held Items Normally Used at Head Height: 18 random drops from a height of 1.5 meters onto concrete covered with 3 millimeters asphalt tile or similar surface.

(2) Table (Desk) Top Equipment 0-5 kilograms: Six random drops from a height of 750 millimeters onto concrete covered with 3 millimeters asphalt tile or similar surface.

(3) The drop tests specified in the mechanical shock conditioning stresses shall be performed as follows: The unit should be positioned prior to release to ensure as nearly as possible that for every six drops there is one impact on each of the major surfaces and that the surface to be struck is approximately parallel to the impact surface.

(b) Telephone Line Surge - Type A

(1) Metallic. Apply two metallic voltage surges (one of each polarity) between any pair of connections on which lightning surges may occur; this includes:

(i) tip to ring;

(ii) tip 1 to ring 1; and

(iii) for a 4-wire connection that uses simplexed pairs for signalling, tip to ring 1 and ring to tip 1.

The surge shall have an open circuit voltage waveform in accordance with Figure 68.302(b) having a front time (t_r) of 10 μs maximum and a decay time (t_d) of 560 μs minimum, and shall have a short circuit current waveshape in accordance with Figure 68.302(c) having a front time (t_r) of 10 μs maximum and a decay time (t_d) of 560 μs minimum. The peak voltage shall be at least 800 volts and the peak short circuit current shall be at least 100 amperes. Surges are applied:

(A) With the equipment in all states that can affect compliance with the requirements of part 68. If an equipment state cannot be achieved by normal means of power, it may be achieved artificially;

(B) With equipment leads not being surged (including telephone connections, auxiliary leads, and terminals for connection to non-registered equipment) terminated in a manner that occurs in normal use;

(C) Under reasonably foreseeable disconnection of primary power sources, with primary power cords plugged and unplugged, if so configured.

(2) Longitudinal. Apply two longitudinal voltage surges (one of each polarity) from any pair of connections on which lightning surges may occur. This includes the tip-ring pair and the tip 1 - ring 1 pair, to earth grounding connections, and to all leads intended for connection to non-registered equipment, connected together.

The surge shall have an open circuit voltage waveform in accordance with Figure 68.302(b) with a front time (t_r) of 10 μs (μseconds) maximum and a decay time (t_d) of 160 μs minimum, and shall have a short circuit current waveshape in accordance with Figure 68.302(c) having a front time (t_r) of 10 μs maximum and a decay time (t_d) of 160 μs minimum. The peak voltage shall be at least 1500 volts and the peak short circuit current shall be at least 200 amperes. Surges are applied:

(i) With the equipment in all states that can affect compliance with the requirements of Part 68. If an equipment state cannot be achieved by normal means of power, it may be achieved artificially;

(ii) With equipment leads not being surged (including telephone connections, auxiliary leads, and terminals for connection to non-registered equipment) terminated in

a manner that occurs in normal use;

(iii) Under reasonably foreseeable disconnection of primary power sources,as for example, with primary power cords plugged and unplugged.

(3) Failure Modes resulting from application of Type A telephone line surges. Regardless of operating state, equipment and circuitry are allowed to be in violation of the longitudinal balance requirements of § 68.310(b) and (c) and, for terminal equipment connected to Local Area Data Channels, the longitudinal signal power requirements of § 68.308(f)(3), if:

(i) Such failure results from an intentional, designed failure mode that has the effect of connecting telephone or auxiliary connections with earth ground; and,

(ii) If such a failure mode state is reached, the equipment is designed so that it would become substantially and noticeably unusable by the user, or an indication is given (e.g., an alarm), in order that such equipment can be immediately disconnected or repaired.

NOTE: The objective of subsection (ii) is to allow for safety circuitry to either open-circuit, which would cause a permanent on-hook condition, or to short-circuit to ground, as a result of an energetic lightning surge. Off-hook tests would be unwarranted if the off-hook state cannot be achieved. A short to ground has the potential for causing interference resulting from longitudinal imbalance, and therefore designs must be adopted which will cause the equipment either to be disconnected or repaired rapidly after such a state is reached, should it occur in service.

(c) *Telephone Line Surge - Type B*

(1) *Metallic.* Apply two metallic voltage surges (one of each polarity) to equipment between any pair of connections on which lightning surges may occur; this includes:

(i) tip to ring;

(ii) tip 1 to ring 1; and

(iii) for a 4-wire connection that uses simplexed pairs for signalling, tip to ring 1 and ring to tip 1.

The surge shall have an open circuit voltage waveform in accordance with Figure 68.302(b) having a front time (t_f) of 9 μs (± 30%) and a decay time (t_d) of 720 μs (± 20%) and shall have a short circuit current waveshape in accordance with Figure 68.302(c) having a front time (t_f) of 5 μs (± 30%) and a decay time (t_d) of 320 μs (±

20%).The peak voltage shall be at least 1000 volts and the peak short circuit current shall be at least 25 amperes. The wave shapes are based on the use of ideal components in Figure 68.302(a) with S_2 in Position M. Surges are applied:

(A) With the equipment in all states that can affect compliance with the requirements of part 68. If an equipment state cannot be achieved by normal means of power, it may be achieved artificially.

(B) With equipment leads not being surged (including telephone connections, auxiliary leads, and terminals for connection to non-registered equipment) terminated in a manner that occurs in normal use.

(C) Under reasonably foreseeable disconnection of primary power sources, as for example, with primary power cords plugged and unplugged.

(2) *Longitudinal.* Apply two longitudinal voltage surges (one of each polarity) from any pair of connections on which lightning surges may occur. This includes the tip-ring pair and the tip 1 - ring 1 pair to earth grounding connections and to all leads intended for connection to non-registered equipment, connected together.

For each output lead of the surge generator, with the other lead open, the surge shall have an open circuit voltage waveform in accordance with Figure 68.302(b) having a front time (t_f) of 9 μs (± 30%) and a decay time (t_d) of 720 μs (± 20%) and shall have a short circuit current waveshape in accordance with Figure 68.302(c) having a front time (t_f) of 5 μs (± 30%) and a decay time (t_d) of 320 μs (± 20%). The peak voltage shall be at least 1500 volts and the peak short circuit current shall be at least 37.5 amperes. The wave shapes are based on the use of ideal components in Figure 68.302)(a) with S_2 in Position L. Surges are applied:

(i) With the equipment in all states that can affect compliance with the requirements of part 68. If an equipment state cannot be achieved by normal means of power, it may be achieved artificially.

(ii) With equipment leads not being surged (including telephone connections, auxiliary leads, and terminals for connection to non-registered equipment) terminated in a manner that occurs in normal use.

(iii) Under reasonably foreseeable disconnection of primary power sources, with primary power cords plugged and unplugged, if so configured.

(3) Failure Modes resulting from application of Type B telephone line surges . Registered terminal equipment and registered protective circuitry shall be capable of withstanding the energy of Surge Type B without causing permanent opening or shorting of the interface circuit and without sustaining damage that will affect compliance with these rules.

Appendix C

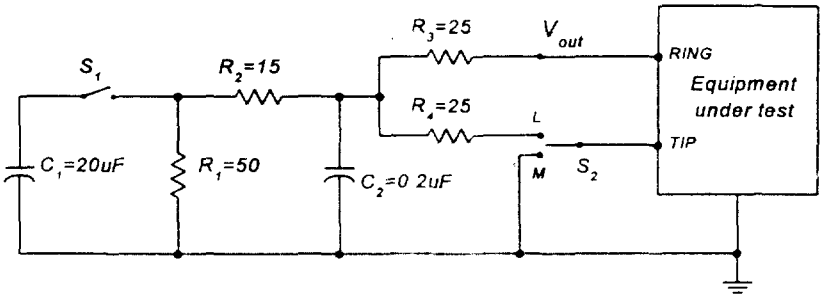
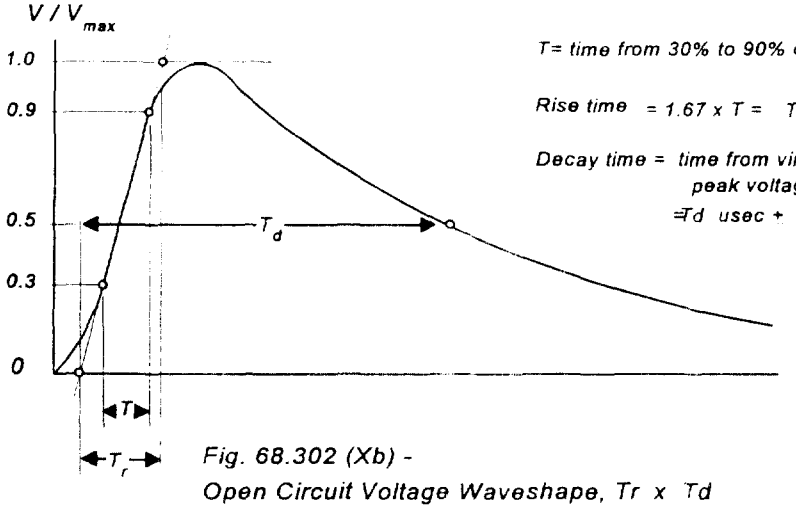


Fig. 68.302 (Xa) - Simplified Surge Generator

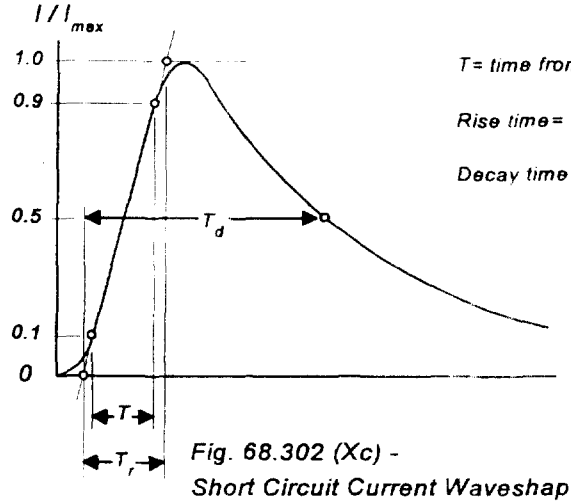


T= time from 30% to 90% of peak voltage

Rise time = 1.67 x T = Tr us + 30%

Decay time = time from virtual origin to 50% of peak voltage on trailing edge =Td usec + 20%

Fig. 68.302 (Xb) - Open Circuit Voltage Waveshape, Tr x Td



T= time from 10% to 90% of peak current

Rise time= 1.25xT = Tr usec ± 30%

Decay time = time from virtual origin to 50% of peak current on trailing edge = Td usec + 20%

Fig. 68.302 (Xc) - Short Circuit Current Waveshape, Tr x Td

(d) *Power Line Surge.*

(1) Apply six power line surges (three of each polarity) between the phase and neutral terminals of the ac power line while the equipment is being powered. The surge shall have an open circuit voltage waveform in accordance with Figure 68.302(b) having a front time (t_f) of 2 μs maximum and a decay time (t_d) of 10 μs minimum and shall have a short circuit current waveshape in accordance with Figure 68.302(c) with a front time (t_f) of 2 μs maximum and a decay time (t_d) of 10 μs minimum. The peak voltage shall be at least 2500 volts and the peak short circuit current shall be at least 1000 amperes. Surges are applied:

(i) With the equipment in all states that can affect compliance with the requirements of part 68. If an equipment state cannot be achieved by normal means of power, it may be achieved artificially;

(ii) With equipment leads not being surged (including telephone connections, auxiliary leads, and terminals for connection to non-registered/non-certified equipment) terminated in a manner which occurs in normal use.

(2) Failure Modes resulting from application of power line surge. Registered terminal equipment and registered protective circuitry shall comply with all the criteria contained in the rules and regulations in this subpart, both prior to and after the application of the power line surge specified in paragraph (d)of this section, not withstanding that this surge may result in partial or total destruction of the equipment under test.

6. Section 68.304 is revised to read as follows:

§ 68.304 Leakage current limitations.

Registered terminal equipment and registered protective circuitry shall have a voltage applied to the combination of points listed in the table below. The test voltage shall be ac of 50 or 60 Hz rms.

(a) All telephone connections;

(b) All power connections;

(c) All possible combinations of exposed conductive surfaces on the exterior of such equipment or circuitry including grounding connection points, but excluding

terminals for connection to other terminal equipment;

(d) All terminals for connection to registered protective circuitry or non-registered equipment;

(e) All auxiliary lead terminals;

(f) All E&M lead terminals, and

(g) All PR, PC, CY1 and CY2 leads.

Gradually increase the voltage from zero to the values listed in the table below over a 30-second time period, then maintain the voltage for one minute. The current in the mesh formed by the voltage source and these points shall not exceed 10 mA peak at any time during this 90-second interval.

Equipment states necessary for compliance with the requirements of this section that cannot be achieved by normal means of power shall be achieved artificially by appropriate means.